

Inspection Report with SI&A Data

Structure Description: 640.09 Foot - 4 Span Steel continuous Stringer/Multi-beam or Girder

2 District: 06 **3 County:** Boone **16 Latitude:** 38°59'28.00" **7 Longitude:** 84°38'38.00"

7 Facility Carried: I-75 RAMP

Milepoint: 180.410

6A Feature Intersected: NB & SB I-75 & KY 18 RAM

9 Location: NB&SB I75 & KY 18 RAMP

NBI	X
Element	X
Fracture Critical	
Underwater	
Special	

Structure Description: 640.09 Foot - 4 Span Steel continuous Stringer/Multi-beam or Girder

NBI CONDITION RATINGS			
58 Deck:	6	61 Channel:	N
59 Superstructure:	7	62 Culvert:	N
60 Substructure:	7	Sufficiency Rating:	81

GEOMETRIC DATA		
48 Max Length Span:		180.118 ft
49 Structure Length:		640.092 ft
32 Approach Roadway:		25.919 ft
33 Median:		(1) Open Median
34 Skew:		41°
35 Flare:		No Flare
50A Curb/Sidewalk Width L:		1.490 ft
50B Curb/Sidewalk Width R:		1.490 ft
47 Horiz. Clearance:		25.918 ft
51 Width Curb to Curb:		25.919 ft
52 Width Out to Out:		29.199 ft
48 Max Length Span:		180.118 ft

DESIGN	
Substandard:	No
Fracture Critical:	No FC Details
43A Main Span Material:	(4) Steel Continuous
43B Main Span Design:	(02) Stringer / Girder
45 Number of Spans Main:	4
44A Approach Span Material:	Not Applicable
44B Approach Span Design:	Not Applicable
46 Number of Approach Spans:	0
107 Deck Type:	(1) Concrete-Cast-in-Place
108A Wearing Surface:	(1) Monolithic Concrete
108B Membrane:	(0) None
108C Deck Protection:	(1) Epoxy Coated Reinforcing
Overlay Y/N:	No
Overlay Type:	None
Overlay Thickness:	-1.000 in
Overlay Date:	

ADMINISTRATIVE		
27 Year Built:		1990
106 Year Reconstructed:		0
42A Type of Service On:		(1) Highway
42B Type of Service Under:		(1) Highway
37 Historical Significance:		(5) Not Eligible
21 Maintenance Responsibility:		(01) State Hwy Agency
22 Owner:		(01) State Hwy Agency
101 Parallel Structure:		(N) No II Structure Exists
52 Width Out to Out:		29.199 ft

APPRAISAL	
36A Bridge Railings:	(1) Meets Standards
36B Transitions:	(1) Meets Standards
36C Approach Guardrail:	(1) Meets Standards
36D Approach Guardrail Ends:	(1) Meets Standards
71 Waterway Adequacy:	(N) Not Applicable
72 Approach Alignment:	(6) Equal Minimum Crit
113 Scour Critical:	(N) Not over Waterway
Recommended Scour Critical:	(N) Not over Waterway

CLEARANCES		
10 Vert. Clearance:		19.334 ft
53 Min. Vert. Clearance Over:		99.999 ft
54A Vert. Under Reference:		(H) Hwy beneath struct.
54B Min. Vert. Underclearance:		18.084 ft
55A Lateral Under Reference:		(H) Hwy beneath struct.
55B Min. Lat. Underclearance R:		11.155 ft
56 Min. Lat. Underclearance L:		0.000 ft
10 Vert. Clearance:		99.999 ft

LOAD RATINGS	
63 Operating Type:	(1) Load Factor (LF)
64 Operating Rating:	110.0 tons
65 Inventory Type:	(1) Load Factor (LF)
66 Inventory Rating:	77.1 tons
Truck Capacity Type I:	tons
Truck Capacity Type II:	tons
Truck Capacity Type III:	tons
Truck Capacity Type IV:	tons

POSTINGS	
41 Posting Status:	(A) Open, No Restriction
Signs Posted Cardinal:	No
Signs Posted Non-Cardinal:	No
Field Postings Gross:	-1 tons
Field Postings Type I:	-1 tons
Field Postings Type II:	-1 tons
Field Postings Type III:	-1 tons
Field Postings Type IV:	-1 tons

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12: Re Concrete Deck

Units	Total Qty	Qty. St. 1	% in 1	Qty. St. 2	% in 2	Qty. St. 3	% in 3	Qty. St. 4	% in 4
SQ.FT	18,690.35	18,590.35	99%	100	1%	0	0%	0	0%

Deck~
 Deck wearing surface area was found to have a minor loss of texture throughout wheel track locations, with stone aggregates becoming highly polished.
 Random areas throughout deck surface at or near expansion joint devices were found to have surface scaling and spalling conditions.
 A minor amount of roadway dirt and debris was found throughout gutter lines of deck surface.
 (See Photos)

520: Conc Re Prot Sys

Units	Total Qty	Qty. St. 1	% in 1	Qty. St. 2	% in 2	Qty. St. 3	% in 3	Qty. St. 4	% in 4
SQ.FT	18,690.35	18,690.35	100%	0	0%	0	0%	0	0%

Conc Re Prot Sys~
 Protection system throughout deck surface was found to be performing as design.

1080: Delamination/Spall/Patched Area

Units	Total Qty	Qty. St. 1	% in 1	Qty. St. 2	% in 2	Qty. St. 3	% in 3	Qty. St. 4	% in 4
SQ.FT	50	0	0%	50	100%	0	0%	0	0%

Spalls~
 Random areas throughout deck surface at or near expansion joint devices were found to have surface scaling and spalling conditions.
 (See Photos)

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107: Steel Opn Girder/Beam

Units	Total Qty	Qty. St. 1	% in 1	Qty. St. 2	% in 2	Qty. St. 3	% in 3	Qty. St. 4	% in 4
FT	2,560	2,550	100%	10	0%	0	0%	0	0%

Girders~
 All steel girder elements throughout structure were repainted during project performed in September of 2010. Paint system was found to be thin on bottom side of both girder elements and in bottom side of random steel diaphragm elements throughout spans. Areas of thin protective coating detected on bottom flanges of girders are now showing random areas of light surface rusting conditions.
 Steel girder elements were found to have minor distortion typical throughout web sections along bays in between areas of vertical stiffeners.
 Note that Girder element #1, near the forward abutment was found to have impact scrapes along bottom side flange.
 Beam element #4, span #3 was found to have a overhead sign attached to the web area.
 (See Photos)

515: Steel Protective Coating

Units	Total Qty	Qty. St. 1	% in 1	Qty. St. 2	% in 2	Qty. St. 3	% in 3	Qty. St. 4	% in 4
FT	14,045.18	14,014.7	100%	30.48	0%	0	0%	0	0%

Steel Protective Coating~
 All steel girder elements throughout structure were repainted during project performed in September of 2010. Paint system was found to be thin on bottom side of both girder elements and in bottom side of random steel diaphragm elements throughout spans. Areas of thin protective coating detected on bottom flanges of girders are now showing random areas of light surface rusting conditions.
 (See Photos)

205: Re Conc Column

Units	Total Qty	Qty. St. 1	% in 1	Qty. St. 2	% in 2	Qty. St. 3	% in 3	Qty. St. 4	% in 4
EACH	9	9	100%	0	0%	0	0%	0	0%

Pier Columns~
 Pier column elements along side of lanes of I-75 north and southbounds were found the have random areas of light strikes and scrapes due to traffic impact; otherwise pier column elements throughout structure were found to be performing as designed at this time.

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215: Re Conc Abutment									
Units	Total Qty	Qty. St. 1	% in 1	Qty. St. 2	% in 2	Qty. St. 3	% in 3	Qty. St. 4	% in 4
FT	141.99	141.99	100%	0	0%	0	0%	0	0%
<p>Concrete Abutment~ Note both the rear and forward abutments were found to have dark staining in random locations throughout, due to leakage from expansion joint seal failures above. Forward abutment was found to have staining throughout backwall, due to leakage from broken retainer in strip seal expansion joint failure. Hairline vertical cracking was found in random concrete bearing pedestals at abutment seat locations.</p> <p>Measurements are as follows: Measurements 08/01/2005 inspection: Left Wall 4.5 inches Right Wall 1.75 inches Measurements 08/29/2007 inspection: Left Wall 4.75 inches Right Wall 3.5 inches Measurements 06/25/2009 inspection: Left Wall 5.0 inches Right Wall 3.75 inches Measurements 06/29/2009 inspection: Left Wall 5.0 inches Right Wall 3.75 inches Measurements 06/13/2013 inspection: Left Wall 5.0 inches Right Wall 3.75 inches Measurements 06/18/2015 inspection: Left Wall 5.0 inches Right Wall 3.75 inches</p> <p>Retaining walls are supporting the forward approach roadway. Lateral movement of retaining wall need to be Monitored and measured with each inspection. Movement of walls has caused settlement on both left and right sides of the forward approach roadway transition and abutment. Settlement of left side continues up to 200 feet and has areas where settlement is up to 8 inches. This settlement has broken the seal of the asphalt to concrete and all water is now piping into embankment fill behind retaining wall accelerating settlement. Roadway drainage boxes are now above roadway due to settlement and no longer performing as designed (See Photos)</p>									

234: Re Conc Pier Cap									
Units	Total Qty	Qty. St. 1	% in 1	Qty. St. 2	% in 2	Qty. St. 3	% in 3	Qty. St. 4	% in 4
FT	90	90	100%	0	0%	0	0%	0	0%
<p>Pier Caps~ Pier cap elements throughout structure were found to be performing as designed at this time. (See Photos)</p>									

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300: Strip Seal Exp Joint

Units	Total Qty	Qty. St. 1	% in 1	Qty. St. 2	% in 2	Qty. St. 3	% in 3	Qty. St. 4	% in 4
FT	87	23.5	27%	43.5	50%	0	0%	20	23%

Strip seal Expansion Joint~
 Expansion joint devices throughout structure are of Strip Seal design.
 Retainers welds at forward abutment are broken and retainer and strip seal is loose and no longer operating as designed.
 All strip seal are full of roadway dirt and debris and are beginning to fail from roadway material being compacted into seal.
 See photos

314: Pot Bearing

Units	Total Qty	Qty. St. 1	% in 1	Qty. St. 2	% in 2	Qty. St. 3	% in 3	Qty. St. 4	% in 4
EACH	20	20	100%	0	0%	0	0%	0	0%

Bearings~
 Bearing devices throughout structure are of Steel Painted Pot design.
 All bearing devices throughout structure were repainted during September of 2010, with all found to be performing as designed at this time.
 Due to newer paint coating system movement in devices could not be detected.
 (See Photos)

Anchor bolt on Girder #4 right rear side of masonry plate at pier #4 has backed out to the point were bolt is against bottom of sole plate and can not back out any farther. Rear abutment has two anchor bolts cut off of every pot bearing at top of masonry plate due to conflict with sole plate bolts . Forward abutment Bearing #1 had 2 bolts cut, Bearing #2 had 2 bolts cut, and Bearing #3 had 1 bolt cut, anchor bolts where cut off to top of masonry plate due to conflict with sole plate bolts. All bearings appear to be performing as designed.

515: Steel Protective Coating

Units	Total Qty	Qty. St. 1	% in 1	Qty. St. 2	% in 2	Qty. St. 3	% in 3	Qty. St. 4	% in 4
EACH	0.09	0.09	100%	0	0%	0	0%	0	0%

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331: Re Conc Bridge Railing									
Units	Total Qty	Qty. St. 1	% in 1	Qty. St. 2	% in 2	Qty. St. 3	% in 3	Qty. St. 4	% in 4
FT	1,280	1,230	96%	50	4%	0	0%	0	0%

Bridge Railing~
 Concrete bridge railing system throughout structure is Jersey Barrier Wall.
 Railing system was found to have a minor loss of protective coating system throughout, along with hairline vertical flexure cracking at random spacing throughout.
 Overhead lights were found to be attached to the bridge railing system along the right side of the structure.

850: 2nd Elem									
Units	Total Qty	Qty. St. 1	% in 1	Qty. St. 2	% in 2	Qty. St. 3	% in 3	Qty. St. 4	% in 4
(EA)	1	1	100%	0	0%	0	0%	0	0%

Steel Diaphragms~
 Steel diaphragms were painted in the year of 2010. All diaphragms were found to be performing as design.

851: Transitions									
Units	Total Qty	Qty. St. 1	% in 1	Qty. St. 2	% in 2	Qty. St. 3	% in 3	Qty. St. 4	% in 4
(EA)	1	0	0%	1	100%	0	0%	0	0%

Transitions~
 Minor settlement was found in both the rear and forward approach roadway transitions to the structure.
 (See Photos)

860: Erosion Ctrl/Prt									
Units	Total Qty	Qty. St. 1	% in 1	Qty. St. 2	% in 2	Qty. St. 3	% in 3	Qty. St. 4	% in 4
(EA)	1	1	100%	0	0%	0	0%	0	0%

Erosion Control~
 Erosion control protection systems were found along both the rear and forward abutment slopes, which were found performing as design.
 (See Photos)

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STRUCTURE NOTES

Structure Stamped 1989
 Vertical clearance of span #2 over KY-18 ramp to southbound I-75 was measured @ 19.56'. (0629/2011)

INSPECTION NOTES

Structure was inspected by Craig Bresch

6/13/2013 SDE taken on both the left and right concrete retaining walls at the forward abutment location, which retain embankment fill for the forward approach roadway transition from structure. Vertical misalignment in these wall elements showed continuing movement/displacement over several inspections during the past, which should remain closely watched for further changes.

Measurements are as follows:

- Measurements 08/01/2005 inspection: Left Wall 4.5 inches Right Wall 1.75 inches
- Measurements 08/29/2007 inspection: Left Wall 4.75 inches Right Wall 3.5 inches
- Measurements 06/25/2009 inspection: Left Wall 5.0 inches Right Wall 3.75 inches
- Measurements 06/29/2009 inspection: Left Wall 5.0 inches Right Wall 3.75 inches (06/29/2011)
- Measurements 06/13/2012 inspection: Left Wall 5.0 in Right Wall 3.75 inches

Both retaining walls supporting the forward approach roadway transition from structure showed according to recorded measurements continuing movement/displacement over several years, which should remain watched. Movement of walls has caused settlement on both left and right sides of the forward approach roadway transition. (06/18/2015)

*Note that vertical clearance of span #2 over KY-18 ramp to southbound I-75 was measured @ 19.56'±. (0629/2011)

Anchor bolt on Girder #4 right rear side of masonry plate at pier #4 has backed out to the point were bolt is against bottom of sole plate and can not back out any farther. Rear abutment has two anchor bolts cut off of every pot bearing at top of masonry plate due to conflict with sole plate bolts . Forward abutment Bearing #1 had 2 bolts cut, Bearing #2 had 2 bolts cut, and Bearing #3 had 1 bolt cut, anchor bolts where cut off to top of masonry plate due to conflict with sole plate bolts. All bearings appear to be performing as designed.

WORK

Action: 1047 - Joints-Replace

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-Replace/repair both the rear and forward expansion joint devices.